

V.3.3-RES-SNGL-SPEC-POOLQ SINGLE RESERVOIR REGULATION OPERATION  
SCHEME POOL ELEVATION CONTROLLED DISCHARGE

Purpose

Scheme POOLQ is used to simulate reservoir operations when releases are based on the elevation of the pool.

Input Summary

<u>Keyword</u>	<u>Definition and Format</u>
POOLQ <u>1</u> /	Input opening keyword for Scheme.
<u>PARMS</u>	Parameter opening keyword for Scheme.
POOLVSQ	Pool elevation (FT or M) versus discharge (CFS or CMS) curve. <ul style="list-style-type: none"><li>- 'j' values of elevation followed by 'j' discharges (maximum of 50 pairs)</li><li>- Elevations must be in ascending order with the ELVSSTOR curve range. <u>2</u>/ (enter -999.0 to obtain an elevation value from the rulecurve <u>3</u>/)</li></ul>
[LINEAR]	Linear interpolation method is used to compute discharge from the pool elevation-discharge curve. Omit to use constant discharge method.
[CURVE]	Rulecurve definition. (Omit if no elevation in POOLVSQ was -999.0.) If defined here: <ul style="list-style-type: none"><li>- 'j' dates followed by 'j' elevations (maximum of 50 pairs)</li><li>- Dates are ascending integers between 1 and 366 inclusive</li><li>- Elevations (FT or M) must be within the bounds of the two neighboring elevations surrounding the -999.0 in the POOLVSQ curve.</li></ul> If referenced to a rulecurve defined in another Scheme give the name and level number of the Scheme in which it was originally defined.
[RULETIME]	Time (hour) of day rulecurve is set. (Omit if rulecurve is defined elsewhere.) <ul style="list-style-type: none"><li>- Integer between 0 and 24 inclusive</li></ul>
<u>ENDPARMS</u>	Ending keyword for parameter input
ENDPOOLQ	Input ending keyword for Scheme.

Notes:

- 1/ No time series or carryover is needed for this Scheme.
- 2/ ELVSSTOR is the elevation versus storage curve defined in the general parameter section.
- 3/ If an elevation is entered as -999.0, indicating rulecurve used as the target level, the bounds of the rulecurve must be between the previous and following elevations.

### Input Examples

1. Constant discharge method and rule curve is used.

```

POOLQ
PARMS
POOLVSQ      500.0      510.0      -999.0      530.0      540.0
              0.0       100.0       200.0       300.0       400.0
CURVE        1         120         240         366
              511.0     515.0     525.0     529.0
RULETIME     12
ENDP
ENDPOOLQ

```

2. Linear interpolation method and rule curve defined in POWERGEN Scheme is used.

```

POOLQ
PARMS
POOLVSQ      500.0      510.0      520.0      -999.0      540.0
              0.0       100.0       200.0       300.0       400.0
LINEAR
CURVE POWERGEN(1)
ENDP
ENDPOOLQ

```

### Method

See Section II.4-RES-SNGL for additional information.

1. If CURVE option is used, replace -999.0 on POOLVSQ curve by the elevation from the rule curve for the current date.
2. If observed pool elevation is available, the reservoir release is determined directly from the POOLVSQ curve.
3. Otherwise, determine pool elevation and reservoir release solving the continuity equation and POOLVSQ curve by linear interpolation or constant discharge method. In the constant discharge method the discharge remains the same between elevation values in the POOLVSQ curve.

Special cases that exist are as follows:

1. If the POOLQ Scheme is used with the ADJUST utility and the only observed data specified is pool elevation (OBSH), then for all periods through the last one with observed data, discharges are computed using adjusted pool elevations (equal to observed elevations whenever observed data are available) and the elevation-discharge curve. Continuity is not preserved. After the last observed data, discharges are simulated by solving continuity equation again using the adjusted carryover at the time of the last observed data value as a starting point. This special case should be used whenever observed pool elevations are dependable. This option can be activated by specifying Time Series Keywords OBSH, ADJH, and ADJQO in the ADJUST utility simultaneously.

### User Guidelines

The POOLQ Scheme is used to mimic the case when the agency operating the reservoir tends to base the outflow on the current pool elevation. Some people refer to this as a rulecurve operation (RES-SNGL refers to a relationship between pool elevation and time of the year as a rulecurve). The SPILLWAY Scheme should be used when the height of the pool above a spillway crest determines the outflow.